

**ATTACHMENT 9**

**CONTAINERS**

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## **1.0 Container Management for Building 528**

### **1.1 Use and Management of Containers**

#### **1.1.1 Description of Containers [40 CFR 264.171, 264.172]**

Hazardous wastes generated on-site are stored and offered for transportation in containers conforming to Department of Transportation specifications.

The applicable DOT specification code can be found on each container. Containers used to store and transport hazardous waste are either new, or recycled (that is the empty shipping container is saved and used to store and transport the material after use, e.g. trichloroethane).

The containers that are used are:

55 gallon steel drums with removable heads  
55 gallon steel drums without removable heads  
55 gallon polyethylene drums without removable heads  
85 gallon steel drums with removable heads (overpack drums)  
85 gallon polyethylene drums with removable heads (overpack drums)  
8, 15, 20 and 30 gallon polyethylene drums without removable heads  
8, 15, 20 and 30 gallon steel drums with removable heads  
Other applicable DOT approved containers (to be determined on a case by case by (EMD))

This selection of the appropriate drum for a particular waste is based on the compatibility of the container with the waste the container will hold. As an example, wastes that are corrosive (subcategory acidic) are stored and offered for transportation in polyethylene drums. Liquid waste are collected in drums without removable heads.

#### **1.1.2. Container Management Practices [40 CFR 264.172]**

Containers used to store hazardous waste must be managed in such a way as to not cause the container to release their contents. To insure that hazardous waste does not escape the container it is stored in, TEAD manages containers in the following manner:

- a. Drums issued to store hazardous wastes are new. It also insures the drums are free from severe defects (corrosion, dents and holes).
- b. Drums used to store hazardous waste are selected based on the compatibility of the material of fabrication of the drum (or drum liner) and the physical and chemical characteristics of the wastes they are to store.
- c. The lids to containers are kept closed and opened only when waste is added, removed or sampled.
- d. Liquid wastes are stored in drums without removable heads. This insures that the liquid contents will not be released if the drums are accidentally tipped over.

e. Reactive hazardous wastes (explosive subcategory) are stored in containers designed specifically to hold explosives and propellants.

f. Containers filled with reactive hazardous wastes (explosive subcategory) are stored in container storage Hazardous Waste Management Units (HWMUs) designed specifically to PEP materials (i.e. ammunition igloos and service magazines).

Movements of containers of hazardous waste are tracked by a unique container number that appears on the hazardous waste container label. Each container and its associated hazardous waste label are issued concurrently by the TEAD Environmental Management Division (EMD). This enables the EMD to track the movement of containers from satellite accumulation points to 90-day storage areas, and if necessary to permitted container storage HWMUs. This system; 1) generates operating records, 2) insures that wastes in the 90-day storage area are moved to an off-site Treatment Storage and Disposal Facility (TSDF), or to an on-site permitted container storage HWMU before 90 days have expired, and 3) insures that the container contents match the container label since the container and label are issued to a pre designated location generating a defined and named waste stream.

To facilitate ease in movement and lessen the possibility of a forklift operator accidentally piercing a barrel with the forklift forks, containers are placed on pallets (maximum, three barrels per pallet) before moving. When barrels are weighed, barrel tongs are attached to the forklift to lessen the possibility of dripping or rupturing a barrel.

Containerized hazardous waste is transported from the generation points to the less than 90-day storage yard, or to the permitted storage facility at building 528 by a 1 ton or appropriate flatbed truck. The perimeter of the bed of the truck is slotted to allow for side boards.

Waste is loaded on to the truck by forklift, with the containers being placed on pallets before loading. The routes the truck uses to transport waste across the facility are either graded/compacted dirt roads, asphalt, or concrete paved roads.

Building 528 is used to store containerized hazardous wastes that do and do not have free liquids. The storage arrangement to be used in building 528 is as follows:

a. All containerized hazardous waste are stored on pallets to elevate the containers being stored from any liquids that may accumulate on the storage area base. 55 gallon barrels will be stored no more than three to a pallet, 85 gallon barrels will be stored no more than two to a pallet. No more than 170 gallons of combined container volume will be stored per pallet.

b. There are four containment areas in Building 528. Each containment area will have a maximum six rows of pallets.

c. At a maximum, each row will be configured as seven pallets per row (with the exception being that the rows against the north wall will be configured with eight pallets per row. Bay 3 and 4 will each have one row of eight pallets).

d. At a maximum, rows will be stacked two high.

e. A minimum of 2.5 feet will be maintained between rows to allow for container inspection.

The container stacking arrangement used in Building 528 is shown in Appendix A.

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Note: 170 gallons per pallet is chosen as a basis since containers of different volumes will be used to store wastes.

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### **1.1.3. Secondary Containment System Design and Operation [40 CFR 270.15(a)(1), 264.175(a), 264.175(a), 264.175(d)]**

The design of Building 528 allows for: a) the secondary containment of any liquids that may leak from containers stored there, b) the segregation of incompatible hazardous wastes, and c) the prevention of the accumulation of precipitation.

A drawing of the base of Building 528 and the bays that will be used to segregate incompatible wastes is in Appendix A. Bay 1 is used to store wastes that are sludges or solids and that are hazardous wastes by Toxicity Characteristic Metals (D004 through D011). Bay 2 is used to store corrosive (D002 alkaline). Bay 3 is used to store ignitable and solvent wastes (D001 and F001 through F005). Bay 4 is used to store corrosive (D002, acidic) wastes. Hazardous wastes with U or P codes will be replaced in the appropriate bay using the aforementioned criteria.

Any wastes placed into storage that are reactive (D003, sulfide or cyanide producing) are stored in Bay 2.

### **1.1.4. Requirement for the Base or Liner to Contain Liquids [40 CFR 264.275(b)(1)]**

The containment system of Building 528 is comprised of a square concrete slab, 75 feet on edge. The base is steel reinforced concrete six inches thick. The base is free of cracks or gaps. A six inch high, six inch wide berm (or curb) runs along the perimeter of the base to provide containment. The base is crowned in the center to cause any liquids that may be spilled to drain to one of the four corners.

A six inch high, six inch wide berm divides the base into four bays to allow for the storage of wastes with free liquids and the segregation of incompatible wastes. Each bay is equal in available secondary containment storage volume and storage area. Each bay is shaped like a square and has an available storage area of  $36.75 \text{ ft} \times 36.75 \text{ ft} = 1350 \text{ ft}^2$ .

The impermeability of the concrete base is enhanced by a polyamide cured coating that is to be applied to the surface and which is compatible with the types of waste that will be stored on the base.

An example of an acceptable coating is Semstone 245 High Performance Coating, or equivalent. The base of the secondary containment area will receive at least two applications to provide a

thickness of 40 mils when dry. The specifications of the example coating mentioned above, along with a compatibility table can be found at the Environmental Office at TEAD.

#### **1.1.5. Containment System Drainage [40 CFR 270.15(a)(2), 264.175.(b)(2)]**

Drainage of the base of Building 528 is provided for. Each cell drains to the corner that is diagonal to the corner of the cell that is at the center of the base (refer to figure in Appendix A).

#### **1.1.6. Containment System Capacity [40 CFR 270.15(a)(4), 264.175(b)(4)]**

The volume of available secondary containment provided by the base of Building 528 in association with the container management practices used by Tooele Army Depot (North) (TEAD(N)) is in compliance with the regulatory requirement.

Each of the four cells comprising the base is 36.75 feet in length and 36.75 feet in width, with a 6 inch high berm. The capacity of secondary containment for a single bay is  $(36.75 \times 36.75)(\text{ft})^2 \times (12)^2 \times (12)^2 (\text{in})^2 (\text{ft})^2 \times 6 (\text{in}) \times 1 (\text{gal})/231 (\text{in})^3 = 5,051$  gallons of secondary containment capacity/cell.

The volume of containers stored in each cell is calculated by information given in Section 1.1.2 titled *Container Management Practices*.

Bays 3 and 4 each have one row that has 1 more pallet per row than Bays 1 and 2. Both Bays 3 and 4 will store containers stacked 2 high, therefore the maximum volume of containers stored in either Bay 3, or Bay 4 is  $2 \times ((6 \text{ rows/cell} \times 7 \text{ pallets/row} \times 170 \text{ gallons/pallet}) + (1 \text{ pallet} \times 170 \text{ gallons/pallet})) = 14,620$  gallons/cell.

Bays 1 and 2 will store containers of hazardous waste similar to the arrangement used in Bays 3 and 4, except the maximum number of pallets for all rows is 7, stacked 2 high. Therefore, the maximum volume of containers stored in either Bay 1, or Bay 2 is  $2 \times (6 \text{ rows/cell} \times 7 \text{ pallets/row} \times 170 \text{ gallons/pallet}) = 14,280$  gallons/cell.

The total volume of waste stored in Building 528 is:

Bays 1 and 2 = 2 cells x 14,280 gallons/cell = 28,560 gallons  
Bays 3 and 4 = 2 cells x 14,620 gallons/cell = 29,240 gallons  
Total = 57,800 gallons

The total available secondary containment volume is: 4 cells x 5,051 gallons/cell = 20,205 gallons.

Required secondary containment storage capacity is in this case 10% of the volume of the waste to be stored. Required secondary containment for 57,800 gallons of stored waste is 5,780 gallons. The available secondary containment capacity is 20,205 gallons. Considering the volume of wastes that will be stored in Building 528, the amount of secondary containment available exceeds that required by regulation by 3.5 times. The margin of excess secondary

containment is more than enough to compensate for any secondary containment volume that is unavailable because of pallets or floor ramps.

#### **1.1.7. Control of Run-on [40 CFR 270.25(a)(4), 264.175(b)(5)]**

Run-on into the containment system of Building 528 is prevented by the elevation of the secondary containment base relative to the surrounding terrain and the building shell.

The building shell of 528 completely covers the secondary containment base and is constructed of walls of metal siding and a gable roof which limit precipitation from contacting the secondary containment base. Continuous roof ventilators are gravity type and designed for a minimum capacity of 450 cubic feet of air per minute for each 10 foot section based on a wind velocity of 5 miles per hour and an exterior-interior temperature differential of 30 degrees F and without screens in place. Three clear panels on the East and West sides allow sufficient light on a sunny to slightly overcast days. If additional lighting is required, explosion proof lighting is provided along the centerline of the roof.

A review of the drawings found in Attachment 1 (Facility Description) will show there is no flood hazard within the boundaries of TEAD. In addition, the base of Building 528 is above the surrounding grade. The entrance used to move containers in and out of the building slopes up from the surrounding grade to the overhead door entrance.

Photographs of Building 528 (the building shell and the secondary containment base) can be found in Appendix B.

There is also a lined containment ditch surrounding Building 528. To allow for drainage away from the building, the side of the ditch next to the building is higher than the side which is opposite and away from the building. The liner installed beneath the base of Building 528 also runs beneath the containment ditch and extends 1 foot beyond the outer edge.

#### **1.1.8. Removal of Liquids from Containment System [40 CFR 270.15(a), 264.175(b)(5)]**

Liquid accumulating in the corners of any cell can be removed by use of an absorbent material or by means of a portable pump, depending on the size of the spill.

The collected liquid can then be analyzed if required. All containers in the storage area are labeled, and an analysis exists for the stored hazardous waste, so user knowledge as to the composition of any liquid hazardous waste accumulated in the secondary containment area will be sufficient in most circumstances, of the liquid originated from a leaking or ruptured hazardous waste container.

#### **1.1.9. Special Requirements for Ignitable and Reactive Wastes [40 CFR 264.176]**

A review of Figure 1 in Attachment 7, *Hazardous Waste Contingency Plan*, shows the location of Hazardous Waste Management Units (HWMUs) will show that all HWMUs used to store ignitable or reactive wastes are further than 50 feet from the property line.

## **2.0 Container Management for Igloo A101**

### **2.1 Use and Management of Containers**

#### **2.1.1 Description of Containers [40 CFR 264.171, 264.172]**

Ammunition Storage Igloo A-101 is the permitted area used for the storage of reactive hazardous wastes containing free liquids. This includes wastes described by EPA waste codes D003 (explosive), KO47 and debris contaminated with explosive.

Wastes that are stored in A-101 are stored in containers that conform with DOT regulations and would not require any repackaging if offered for transportation (however, in most cases reactive wastes (explosive subcategory) are treated at either the Subpart X (Open Burn/Open Detonation) or Subpart O (incinerator) HWMUs operated by TEAD.

Reactive wastes are generated either through ammunition maintenance, or ammunition demilitarization operations. Wastes generated by ammunition demilitarization operations are essentially discarded products. They are stored in the shipping containers they were received in. These discarded products were shipped to TEAD as usable Propellant Explosive and Pyrotechnic (PEP) items in containers and/or packaging arrangements conforming to DOT specification for explosive transport.

Wastes generated by ammunition maintenance operations occurring at TEAD and Deseret Chemical Depot (DCD) are transported and stored in the following containers:

- 55 gallon steel drums with removable heads
- 55 gallon steel drums without removable heads
- 55 gallon polyethylene drums without removable heads
- 85 gallon steel drums with removable heads (overpack drums)
- 85 gallon polyethylene drums with removable heads (overpack drums)
- 8 and 15 gallon polyethylene drums without removable heads
- 8 and 15 gallon steel drums with removable heads
- Containers designed specifically for packaging PEP items

The selection of the appropriate drum for a particular waste is based on the compatibility of the container with the waste it will store and the physical form of the waste. Waste containing free liquids generated from ammunition maintenance operations are primarily water contaminated with explosives and not corrosive.

#### **2.1.2. Container Management Practices [40 CFR 264.172]**

Both Reactive (explosive subcategory) hazardous wastes with and without free liquids will be stored in igloo A-101. The determination of whether or not a waste contains free liquids will be made either by user knowledge or the Paint Filter Test (SW-846 Method 9095).

Containers used to store hazardous wastes must be managed in such a way as not to cause the containers to release their contents. To insure that hazardous waste does not escape the container it is stored in. TEAD manages containers in the following manner:



Drums issued to store hazardous wastes in are new drums. It also insures the drums used to store hazardous waste are free from severe defects (corrosion, dents and holes).

Drums used to store hazardous waste are selected based on the compatibility of the material of fabrication of the drum (or drum liner) and the physical and chemical characteristics of the wastes they are to store.

The lids to containers are kept closed and opened only when waste is added, removed or sampled.

Liquid wastes are stored in drums without removable heads. This insures that the liquid contents will not be released if the drum is accidentally tipped over.

Reactive hazardous wastes (explosive subcategory) are stored in containers designed specifically to hold explosives and propellants.

Containers filled with Reactive hazardous wastes (explosive subcategory) are stored in container storage Hazardous Waste Management units (HWMUs) designed specifically to hold PEP materials (i.e. ammunition igloos and service magazines).

Movements of containers of hazardous waste are tracked by a unique container number that appears on the hazardous waste container label. Each container and its associated hazardous waste label are issued concurrently by the TEAD Environmental Management Division (EMD). This enables the EMD to track the movement of containers from satellite accumulation points to 90-day storage areas and if necessary to permitted container storage HWMUs. This system: 1) generates operating records, 2) insures that wastes in the 90-day storage area are moved to an off-site Treatment Storage and Disposal Facility (TSDF), or to an on-site permitted container storage HWMU before 90-days have expired and 3) insures that the container contents match the container label since the container and label are issued to a pre designated location generating a defined and named waste stream.

To facilitate ease in movement and lessen the possibility of a forklift operator accidentally piercing a barrel or container with the forklift forks, containers are placed on pallets. When barrels are weighed barrel tongs are attached to the forklift to lessen the possibility of dropping or rupturing a barrel.

Containerized hazardous waste is transported from the generation points to the appropriate hazardous waste management unit by flat bed truck, tractor trailer or van. The perimeter of the bed of the truck and the trailer is slotted to allow for side railing or side boards. The waste is loaded on to the truck by forklift, with the container being placed on pallets before loading. The routes the truck uses to transport containerized hazardous waste within the boundaries of the facility are either graded/compacted dirt roads, asphalt, or concrete paved roads.

The geometry of Igloo A-101 (semi-circular in cross section) allows for varying storage capacity depending on container dimensions (small containers give tighter packing arrangement). In some instances different containers and container sizes will be stored at the same time. For the purpose of determining compliance in reference to storage capacity, calculations for container

storage arrangements are based on all wastes being stored in 55 gallon drums. The management practices and storage arrangement for containerized waste is as follows:

All containerized hazardous waste are stored on pallets to elevate the containers being stored from any liquids that may accumulate. 55 gallon barrels will be stored no more than three to a pallet, or for containers which are not 55 gallon barrels, 85 gallon drums will be stored no more than two to a pallet. No more than 170 gallons of combined container volume will be stored per pallet.

At a maximum, each row will be configured as three pallets per row, with two pallets at floor level and one pallet stacked on top of the pallet closest to the storage areas central aisle space.

Each side of the igloo will have at a maximum 9 rows.

A minimum of 2.5 feet will be maintained between rows to allow for container inspection.

This arrangement allows for the storage of:

2 sides x 9 row/side x 3 pallets/row x 170 gallons/pallet = 9,180 gallons of hazardous waste storage in Igloo A-101, of which:

No more than 6,120 gallons of wastes with free liquids will be stored in Igloo A-101. Waste with free liquids and wastes without free liquids will be segregated to allow for ease in inspections, and to insure that the secondary containment system capacity of the igloo is not exceeded. The boundary of the separate areas in the igloo chosen to store wastes with and without free liquids will be marked by a rope. The rope will be moved accordingly, to allow for the potential variability in storage volume of the two different waste categories (i.e. wastes with and wastes without free liquids).

A figure that shows the container stacking arrangement used in Igloo A-101 is in Appendix A.

### **2.1.3. Secondary Containment System Design and Operation [40 CFR 270.15(a)(1), 264.175(a), 264.175(d)]**

The base of Igloo A-101 has been prepared to allow for the storage of hazardous wastes containing free liquids.

This was done by sealing the drains that are found on each side of the igloo where the head wall, blast barrel wall and floor intersect, 2) repairing all cracks that were in the floor and 3) coating the floor and gutters with a rubber based concrete and masonry sealer.

A rubber base concrete and masonry sealer is impermeable to moisture. This type of concrete seal limits the type of liquid wastes that can be stored in Igloo A-101 to explosive contaminated water only. Acids, bases and solvents are not compatible with a concrete sealant of this type but Igloo A-101 will only be used to store D003 (explosive) wastes, K047 listed waste and debris contaminated with explosive and not D002 or F001 through F005 wastes.

There are no berms or dikes in A-101 to allow for storage of incompatible wastes, however, only D003 (explosive), K047 listed waste and debris contaminated with explosives will be stored in A-101, all of which are compatible.

Secondary containment in Igloo A-101 is created by the design of the interior of the igloo structure. Components of the containment area are a concrete slab, crowned at the center, the lower portion of the barrel of the igloo which makes up the walls and the roof, and the back and front walls (excluding the area of the floor 2 feet on each side of the igloo lengthwise center line).

The floor of A-101 forms the base of the secondary containment area and is a 26.5 foot by 60 foot concrete slab, 6 inches thick that has been reinforced with 6 inch by 6 inch #0 gauge welded mesh. Gutters run the length of each side of the base. They are located four inches out from where the base and barrel join and are four inches wide. The gutters vary in depth from .5 inches at the back of the igloo, to 2.5 inches deep at the front. A drain port is provided for each gutter to allow the drains to drain to the outside of the igloo. However, these drains have been plugged in order to prevent accumulated liquids from leaving the igloo (the containment area).

#### **2.1.4. Requirement for the Base or Liner to Contain Liquids [40 CFR 264.275(b)(1)]**

The construction of the base and containment system of Igloo A-101 is described in the previous section.

The design of the secondary containment system of Igloo A-101 limits this area to the storage of compatible hazardous waste containing free liquids, since there are no provisions for the segregation of incompatible wastes.

All cracks in the base of Igloo A-101 have been repaired and the base is now free from cracks and voids. The base has been coated with a Rubber Based Concrete and Masonary Sealer, which makes the base impermeable to water. Although a sealer of this type limits the type of hazardous waste that can be stored in Igloo A-101 because of the limited type of wastes that are compatible with the sealer. Liquid wastes that will be stored in Igloo A-101 are water contaminated with explosives.

A figure with Igloo A-101 design details is in Appendix A and a photograph of Igloo A-101 is in Appendix B.

#### **2.1.5. Containment System Drainage [40 CFR 270.15(a)(2), 264.175.(b)(2)]**

Drainage for the containment system is provided by the crowned floor and the varying depth of the gutters which run down the length of both sides of the igloo.

These gutters will hold liquids since the drains found at the down gradient end of them have been plugged. An additional operational procedure which enhances the limited drainage capabilities of A-101 is the use of pallets. Pallets raise the containers holding the waste above any liquid that may leak or be spilled from a stored container.

#### **2.1.6. Containment System Capacity [40 CFR 270.15(a)(4), 264.175(b)(4)]**

Ammunition Storage Igloo A-101 is constructed similar to the other igloos found throughout the Ammunition Operations Directorate. All ammunition storage igloos are designed to direct and dissipate the energy that would be associated with the potential explosion of the Propellant Explosive and Pyrotechnic (PEP) items they store and thereby prevent any accidental detonation from propagating to neighboring storage igloos. The amount of PEP material that can be stored in any one igloo is limited by the design of the igloo and the relative position (spacing) of neighboring storage igloos. The amount of PEP materials the igloo can store is limited to that which, if detonated, would not cause the neighboring igloos to detonate also.

If the factors of spacing and igloo design are used as a basis for calculating storage capacity, Igloo A-101 is able to store far more PEP material than if the basis of calculating storage capacity is available secondary containment, which in this case is the limiting factor.

The geometry of the crowned base (square footage of the base, excluding the area running down the middle of the floor 2 feet wide on each side of the center line) and plugged gutters must be considered when calculating the secondary containment capacity of A-101. Compliance with secondary containment capacity is maintained in Igloo A-101 by limiting the amount of hazardous wastes with free liquids stored at any one time.

The igloo's base, interior gutters, side walls, head wall and sealed gutter drains create an available secondary containment capacity of 764 gallons (see Appendix 9.b.1.). Regulations require that containers storage hazardous waste management units storing wastes with free liquids have enough secondary containment to hold 10% of the total volume of the containers holding wastes with free liquids (container holding wastes without free liquids are not considered in the calculation). Therefore, the 764 gallons of secondary containment provided in Igloo A-101 allows for the storage of 7,640 gallons of hazardous wastes with free liquids. TEAD(N) will manage the storage of hazardous wastes in Igloo A-101 so that of the total volume of wastes stored (9,180 gallons), no more than 6,120 gallons of hazardous wastes will contain free liquids.

#### **2.1.7. Control of Run-on [40 CFR 270.25(a)(4), 264.175(b)(5)]**

A review of Figure 1 of Attachment 1, Facility Description, shows there is no flood hazard within the boundaries of TEAD. The igloo structure and the orientation of the entrance to Igloo A-101 in relation to the surrounding terrain drain field prevent any run-on or accumulation of precipitation.

#### **2.1.8. Removal of Liquids from containment System [40 CFR 270.15(a), 264.176(b)(5)]**

The only method of removing accumulated liquids from the secondary containment system used in Igloo A-101 is to use absorbent. The spent absorbent is collected and containerized and properly managed.

#### **2.1.9. Special Requirements for Ignitable and Reactive Wastes [40 CFR 264.176]**

A review of Figure 1, found in Attachment 7 will show that all HWMUs used to store ignitable or reactive wastes are further than 50 feet from the property line.

### **3.0 Container Management for Ammunition Igloos C-815 and C-816, Service Magazines 1368 and 1370 and Above Ground Magazine 1205; Container Storage Facilities for Reactive (explosive) Wastes Without Free Liquids**

#### **3.1 Use and Management of Containers**

##### **3.1.1. Test for Free Liquids [ 40 CFR 270.15(b)(1) ]**

Igloos C-815 and C-816; Service Magazines 1368 and 1370 and Above Ground Magazine 1205, will be used to store hazardous wastes. There are no provisions for secondary containment in the design of either structure, therefore these areas will be limited to the storage of Reactive (explosive subcategory) hazardous wastes without free liquids, and debris contaminated with explosive residues without free liquids.

In most cases, Igloos C-815 and C-816; Service Magazines 1368 and 1370 and Above Ground Magazine 1205 will be used to store munitions and/or Propellant Explosives and Pyrotechnic (PEP) materials scheduled for demilitarization (thermal treatment) at either the Subpart X (Open Burning/Open Detonation), or Subpart O (Incinerator) Hazardous Waste Management Units operated by Tooele Army Depot (TEAD). These storage areas will also be used to store treatability study samples that are Reactive (explosive subcategory).

The determination as to whether or not a waste contains free liquids can be made in 2 different ways:

a. User Knowledge - If the waste is an off-spec ammunition or off-spec PEP material previously stored at TEAD or Deseret Chemical Depot (DCD), the operator (TEAD) will have knowledge as to the characteristics of the waste relating to the presence or absence of free liquids. TEAD has a long history of storing, maintaining, and demilitarizing PEP materials. PEP materials that become hazardous waste were manufactured to government standards and this information is available through ammunition specification sheets and drawings. Therefore in most circumstances, user knowledge can be applied to determine if a waste has free liquids.

b. Physical Analysis - If there is doubt as to whether a waste contains free liquids, the waste will be analyzed for the presence of free liquids by using the Paint Filter Liquid Test (SW-846 method 9095).

NOTE: Since the type of hazardous waste to be stored in these areas is limited to Reactive (subcategory explosive), almost all the waste that is stored in Igloos C-815; Service Magazines 1368 and 1370 and Above Ground Magazine 1205 will be discarded conventional munitions and ammunition.

##### **3.1.2. Description of Containers [40 CFR 264.172, 264.172 ]**

Containers used to store Reactive (explosive subcategory) hazardous waste in Igloos C-815, C-816; Service Magazines 1368 and 1370 and Above Ground Magazine 1205, are such that if the wastes were to be transported over public highways, no repackaging would be required. In other words, wastes are placed into storage in the same containers they are shipped in. The

containers used to store hazardous wastes comply with Department of Transportation (DOT) regulations for class A, B, and C explosives.

Hazardous wastes stored in Igloo C-815, Igloo C-816; Service Magazines 1368 and 1370 and Above Ground Magazine 1205, will be generated both on and off-site. Wastes generated on-site come from: 1) off-spec PEP materials that were previously stored at TEAD as usable stock, or 2) wastes generated from the reconfiguration of munitions.

In the first case, the PEP materials were packaged to conform with DOT regulations for Class A, B, or C explosives at the time they were shipped to TEAD as usable product.

In the second case, the container that will be used to store PEP materials that are no longer useful because they were damaged during reconfiguration will be:

- \_ Containers designed specifically for PEP materials.
- \_ 55 gallon steel drums with removable heads.
- \_ 85 gallon steel drums with removable heads.
- \_ 8 and 15 gallon steel drums with removable heads

### **3.1.3. Container Management Practices [ 40 CFR 264.172 ]**

Containers used to store hazardous waste must be managed in such a way as not to cause the containers to release their contents. To insure that hazardous waste does not escape the container it is stored in, TEAD manages containers in the following manner:

- a. Drums issued to store hazardous wastes in are new drums. This insures that the drums used to store hazardous waste are free from severe defects (corrosion, dents, and holes).
- b. Drums used to store hazardous waste are selected based on the compatibility of the material of fabrication of the drum (or drum liner) and the physical and chemical characteristics of the wastes they are to store.
- c. The lids to containers are kept closed, and opened only when waste is added, removed or sampled.
- d. Reactive hazardous wastes (explosive subcategory) are stored in containers designed specifically to hold explosives and propellants.
- e. Containers filled with reactive hazardous wastes (explosive subcategory) are stored in container storage Hazardous Waste Management Units (HWMUs) designed specifically to hold PEP materials (i.e. ammunition igloos and service magazines).

Movements of containers of hazardous waste are tracked by a unique container number that appears on the hazardous waste container label. Each container and its associated hazardous waste label are issued concurrently by the TEAD Environmental Management Division (EMD).

This enables the EMD to track the movement of containers from satellite accumulation points to 90 day storage areas, and if necessary to permitted container storage HWMUs. This system; 1) generates operating records, 2) insures that wastes in the 90 day storage area are moved to an off-site Treatment Storage and Disposal Facility (TSDF), or to an on-site permitted container storage HWMU before 90 days have expired, and 3) insures that the container contents match the container label since the container and label are issued to a pre-designated location generating a defined and named waste stream.

To facilitate ease in movement and lessen the possibility of a forklift operator accidentally piercing a barrel or container with the forklift forks, containers are placed on pallets. Single containers are handled with barrel tongs that are attached to the forklift to lessen the possibility of dropping or rupturing the container.

Containerized hazardous wastes are moved from generation points to the appropriate HWMU by flat bed truck, tractor trailer, or van. The perimeter of open trailers and truck beds are slotted to allow for the placing of side rails (i.e. side boards). The vans and trailers used to move PEP items have rollers fabricated into the floor of the cargo area. This allows for ease in loading and unloading, however during transportation pallets must be kept in place by wood blocks positioned in such a way as to prevent the rollers from moving.

The containers are loaded onto trucks by forklift by first placing the containers on pallets. All roads used by vehicles transporting hazardous waste are made of either graded/compacted dirt, asphalt, or concrete.

The geometry of Igloos C-815 and C-816 and Service Magazines 1368 and 1370 (semi-circular in cross section) allows for varying storage capacity depending on container dimensions (small containers give a tighter packing arrangement). Since different types and sizes of containers are used to store hazardous waste, and all containers of hazardous waste will be stored on pallets, a volume per pallet basis is used to determine the storage capacity of the HWMUs. The volume chosen is based on a theoretical ammunition pallet of 4 ft X 4 ft X 5 ft having a total volume of 80 cubic feet. The three most frequently used pallets are 40 inches X 48 inches, 42 inches X 53 inches and 36 inches X 40 inches. TEAD used 4 feet wide because the ammunition containers banded to the pallet can extend over a few inches and used four feet long because the 48 and 40 inch long pallets are the most common and the 53 inch long pallet the least common.

The management practices and storage arrangement for containerized wastes without free liquids that are stored in Igloo C-815 and Igloo C-816 are as follows:

- a. All containers of hazardous waste will be stored on pallets to elevate the container above any accumulated liquids. Eighty cubic feet of combined container volume will be stored per pallet.
- b. At a maximum, 54 pallets per row, 18 pallets long and three high will be stored.
- c. Three rows spaced a minimum of 2.5 feet apart and from the walls,

Use of the above storage arrangement gives Igloo C-815 and C-816 a storage capacity of:  
 $3 \text{ rows} \times 54 \text{ pallets/row} \times 80 \text{ cubic feet/pallet} = 12,960 \text{ cubic feet.}$

Refer to Appendix A for a figure showing C-815 and C-816 container storage arrangement.

The management practices and storage arrangements for containerized wastes without free liquids that are stored in Service Magazines 1368 and 1370 are as follows:

- a. All containers of hazardous waste will be stored on pallets to elevate the containers from any accumulated liquids. No more than 80 cubic feet of combined container volume will be stored per pallet.
- b. At a maximum of ten pallets will be configured in a single row down the middle of each magazine with the maximum length of five pallets and a maximum height of two pallets.
- c. A minimum of 2.5 feet will be maintained clear between the rows and sidewalls to allow for container inspections.

Use of the above storage arrangement gives Service Magazines 1368 and 1370 a storage capacity of: 1 row x 10 pallets/row x 80 cubic feet/pallet = 800 cubic feet each.

Refer to Appendix A for a figure showing Service Magazine 1368 and 1370 container storage arrangements.

The management practices and storage arrangements for containerized wastes without free liquids that are stored in Above Ground Magazine 1205 are as follows:

- a. All containers of hazardous waste will be stored on pallets to elevate the containers above any accumulated liquids. No more than 80 cubic feet of combined container volume will be stored per pallet.
- b. A maximum of 150 pallets per row, fifty pallets long and three high.
- c. Six rows spaced a minimum of 2.5 feet apart and from the walls.

Use of the above storage arrangement gives each of the Above Ground Storage Magazine 1205 a storage capacity of: 6 rows x 150 pallets/row x 80 cubic feet/pallet = 72,000 cubic feet.

Refer to Appendix A for a figure showing the Above Ground Storage Magazine 1205 container storage arrangement.

### **3.2. Container Storage Area Drainage [ 40 CFR 270.15(b)(2), 264.175(c) ]**

Drainage for the storage area in Igloo C-815 and C-816 is provided by the crowned floor and the varying drainage gradient of the gutters which run down the length of both sides of the igloo. Igloo C-815 and C-816 are orientated relative to the drain field of the surrounding area so that the back of the igloo is at a higher elevation than the front (entrance). Water cannot drain into the igloo.



An additional operational procedure which enhances the limited drainage capabilities of C-815 and C-816 is the use of pallets to store containers on. Pallets raise the container holding hazardous waste above any liquid that may be introduced into the storage area.

Similar methods are used to keep moisture out of Service Magazines 1368 and 1370. Pallets are used to store containers on and the floor is sloped to cause the liquids to run towards the entrance. Water cannot drain into the service magazine.

Hazardous wastes without free liquids are stored in Igloos C-815 and C-816; Service Magazines 1368 and 1370 and Above Ground Magazine 1205. The only way for liquid to enter these HWMUs is if the containers became wet by rain or snow while they were being transferred into the storage area. The Above Ground Service Magazine 1205 are elevated off the ground and water cannot drain into the structures. In addition, the containers are on pallets that elevate the waste off the floor.

Photographs can be found in Appendix B.

### **3.3. Special Requirements for Ignitable and Reactive Wastes [ 40 CFR 264.176 ]**

A review of Figure 1 in Attachment 7, *Hazardous Waste Contingency Plan*, shows that all HWMUs used to store ignitable or reactive wastes are located at least 50 feet from the property line.

## **Apppendix A**

### **Container Storage Configurations**

**Appendix B**  
**Photographs of Storage Buildings**